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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/075,666	05/11/98	KONDO T	450100-2780.

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EXAMINER	
CHANG, J	
ART UNIT	**PAPER NUMBER**
2623	10

DATE MAILED: 12/07/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.	Applicant(s)
09/075666	Kondo
Examiner	**Group Art Unit**
Jon Chang	2623

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication .
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

☒ Responsive to communication(s) filed on 3/10/00, 8/7/00.

☐ This action is **FINAL.**

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle,* 1935 C.D. 1 1; 453 O.G. 213.

Disposition of Claims

☒ Claim(s) 1-38 is/are pending in the application.

Of the above claim(s) _____ is/are withdrawn from consideration.

☒ Claim(s) 1-14 is/are allowed.

☒ Claim(s) 15-38 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claim(s) _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 11 9(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 1 7.2(a)).

*Certified copies not received: _____.

Attachment(s)

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 9

☐ Interview Summary, PTO-413

☒ Notice of Reference(s) Cited, PTO-892

☐ Notice of Informal Patent Application, PTO-152

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Other _____

Office Action Summary

Response to Applicant's Amendment and Arguments

1. The amendment filed March 15, 2000, has been entered and made of record.

2. The Examiner acknowledges Applicant's response with regard the issue raised under 37 CFR 1.178 concerning the original patent.

3. The rejection under 35 U.S.C. § 112, second paragraph, is withdrawn in response to Applicant's amendment.

4. Applicant's arguments have been fully considered, but they are not deemed to be persuasive for at least the following reasons.

On page 10 of the response, Applicant argues in essence that each of independent claims 15, 19, 33 and 36 specifically require means or step for generating all of pixel data representing pixel values of said second digital image. Applicant further argues that Kanno passes the reference data through to the output, whereas the claims require that none of the reference data can be passed through to the output.

In response, the Examiner first notes that claims 33 and 36 do not require all of the pixel data representing pixel values of the second digital image by generated. Claims 33 and 36 only require "generating a plurality of pixel data."

The Examiner further notes that giving the term "generating" its broadest reasonable interpretation, the interpolation circuit shown in Fig.4 does "generate" all of the pixel data representing pixel values of the second digital image in the sense that all pixel data are

"produced" (i.e., generated) at the terminal 15, whether the input pixel data are passed through to the output or not.

This office action contains a new grounds of rejection, and is therefore non-final.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371© of this title before the invention thereof by the applicant for patent.

6. Claims 15, 19, 22, 33, 35-36 and 38 are rejected under 35 U.S.C. 102(e) as being anticipated by Kanno et al. (US 5,229,868).

As to claims 15 and 33, Kanno discloses a digital signal conversion apparatus (figures 1 and 4) which includes:

-a memory for storing class data for respective classes at addresses associated with at least a training digital image signal (figure 11, items 3 and 9). The training image signal has a high resolution component (see column 1, lines 35-45);

-means for receiving first digital image signal including pixel data (figure 11, item 4);

-means for clustering (figure 12, item 19 clusters input signal into a class designated by r1-r16) pixel data in accordance with adjacent pixel data of the second digital image signal (e.g., r6 and r7 are adjacent to h1) to produce a class;

-means for retrieving class data from one of the addresses of the memory corresponding to the class of the first digital image signal (the class r1-r16 is used to address the memory to retrieve the class data h1-h3; figure 3); and

-means for generating all pixel data representing pixel values of the second digital image signal based upon at least the retrieved class data (figures 1 or 11, item 7). See column 4, lines 32-41. Note that the interpolation circuit, as shown for example in Fig.4 does "generate" all of the pixel data representing pixel values of the second digital image in the sense that all pixel data are "produced" (i.e., generated) at the terminal 15.

Claims 19 and 36 recite a method which generally corresponds to the apparatus of claims 15 and 19 and are rejected on the same grounds.

As to claims 22, 35 and 38, Kanno teaches that the class data stored in memory corresponds to pixel data representing the second standard (i.e., higher resolution; see figure 2, h1-h3) and the means for generating generates pixel data representing the second image signal by providing the retrieved class data as pixel data representing pixel values. See column 4, lines 38-41.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 17 and 21, are rejected under 35 U.S.C. 103(a) as being unpatentable over Kanno et al. (US 5,229,868).

Kanno does not teach the use of an orthogonal decoding to provide the input digital signal. Kanno does teach that the image processing system is intended to be used with facsimile communication (column 1, lines 1-25). It is common in the art to transmit facsimile digital signals using orthogonal coding (the Examiner takes official notice of this fact). It would have been obvious to one of ordinary skill in the art, to include an orthogonal decoder in the image input device because Kanno et al. teaches that the system is to be used in the facsimile environment which commonly includes such encoding of digital signals.

9. Claims 18, 23, 25, 26, 27, 30, 32, are rejected under 35 U.S.C. 103(a) as being unpatentable over Kanno et al. (US 5,229,868) and further in view of Collins (US 4,587,556).

To the extent that these claims mirror the language of claims 15, 19, 33 and 36 above, Kanno applies as already discussed above.

As to claims 23, 27 and 30, Kanno does not specifically deal with standard and high definition *video* signals. However, conversion from a standard (i.e., lower) definition video signal standard (i.e., NTSC at 525 lines/field) to a higher definition video signal standard (i.e., PAL at 625 lines/field) is well known in the art. Collins, for example, discloses a system and method for performing this function. See figures 2, 4 and 5 as well as the Abstract and column 5, lines 19-27. Given the fact that using interpolation to convert between video signals is well known, it would have been obvious to one of ordinary skill in the art to utilize the specific interpolation processes taught by Kanno for converting *video* signals in order to obtain the image quality advantages that reference teaches (by using learning image data, etc.) when converting a video signal. Note additionally that, although Kanno does not discuss video signals, the possibility of interpolating video data in the same way is not excluded since the mechanics of interpolating a single still-frame image such as in Kanno would not, in principle, be different from interpolating a single frame of a continuous stream of video data.

As to claim 25, Kanno teaches that the class data stored in memory corresponds to pixel data representing the second standard (i.e., higher resolution; see figure 2, h1-h3) and the means for generating generates pixel data representing the second image signal by providing the retrieved class data as pixel data representing pixel values. See column 4, lines 38-41.

Claims 18, and 32 recite generally similar limitations and are rejected on the same ground as applied to claim 25 above.

As to claim 26, Kanno teaches means for generating the class data (column 5, lines 9-19).

10. Claims 16, 20, 34 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kanno et al. (US 5,229,868) and further in view of Tararine et al. (US 5,048,102).

As applied to claims 15, 19, 33 and 36 above, Kanno does not teach that the class data is coefficient data and the means for generating the second image data operates in accordance with the coefficient data. Kanno teaches data conversion using stored interpolated values which have already been computed. Tararine et al. teaches that these two methods are equivalents in the art (column 7, line 15 through column 8, line 7). It would have been obvious to one of ordinary skill in the art to replace the direct accessing of the interpolation data taught by Kanno et al. with a method that computes the interpolation data from weights or coefficients. Because Tararine et al teaches that these methods are equivalents, use of one or the other would have been an obvious and routine substitution dictated by constraints or requirements of a particular designer.

11. Claims 24, 28, 29, 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kanno et al. (US 5,229,868) and Collins (US 4,587,556) as applied to claim 23 above, and further in view of Tararine et al. (US 5,048,102).

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accessing of the interpolation data taught by Kanno et al. with a method that computes the interpolation data from weights or coefficients. Because Tararine et al teaches that these methods are equivalents, use of one or the other would have been an obvious and routine substitution dictated by constraints or requirements of a particular designer.

Claim 29 recites generally similar limitations and are rejected on the same ground as applied to claim 25 above.

12. Claims 15, 17, 19, 21, 22, 33, 35-36 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kanno in view of Matsumura (US 5,148,499).

As to claims 15 and 33, Kanno discloses a digital signal conversion apparatus (figures 1 and 4) which includes:

-a memory for storing class data for respective classes at addresses associated with at least a training digital image signal (figure 11, items 3 and 9). The training image signal has a high resolution component (see column 1, lines 35-45);

-means for receiving first digital image signal including pixel data (figure 11, item 4);

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-means for retrieving class data from one of the addresses of the memory corresponding to the class of the first digital image signal (the class r1-r16 is used to address the memory to retrieve the class data h1-h3; figure 3); and

-means for generating pixel data representing pixel values of the second digital image signal based upon at least the retrieved class data (figures 1 or 11, item 7). See column 4, lines 32-41.

With regard to "generating all pixel data," in one sense, Kanno generates all data since the interpolation circuit, as shown for example in Fig.4 does "generate" all of the pixel data representing pixel values of the second digital image by producing (i.e., generating) the pixel data at the terminal 15. On the other hand, if one were to interpret the phrase "generating all pixel data" to mean that the system synthesizes all of the pixel data of the second digital image through computations on the pixel data of the first digital image, this is not disclosed by Kanno. However, this is extremely old and well known in the art. For example, Matsumura teaches this (see for example, Fig.2B, and column 4, lines 27-32). As explained in Matsumura, the technique provides the advantage of preventing image deterioration (e.g., column 2, lines 51-57). Therefore, it would have been obvious to one of ordinary skill in the art to modify Kanno according to Matsumura in order to obtain this advantage.

Claims 19 and 36 recite a method which generally corresponds to the apparatus of claims 15 and 19 and are rejected on the same grounds.

As to claims 22, 35 and 38, Kanno teaches that the class data stored in memory corresponds to pixel data representing the second standard (i.e., higher resolution; see figure 2, h1-h3) and the means for generating generates pixel data representing the second image signal by providing the retrieved class data as pixel data representing pixel values. See column 4, lines 38-41.

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13. Claims 18, 23, 25, 26, 27, 30, 32, are rejected under 35 U.S.C. 103(a) as being unpatentable over Kanno et al. (US 5,229,868) and Matsumura (US 5,148,499), and further in view of Collins (US 4,587,556).

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Claim 29 recites generally similar limitations and are rejected on the same ground as applied to claim 25 above.

Allowable Subject Matter

16. Claims 1-14 are allowable over the prior art of record.

Reasons for indicating allowable subject matter were given in the last office action, paper no. 4.

References Cited

17. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent 5,511,137 to Okada teaches a process and apparatus for image magnification which generates all the pixel data of a second digital image by using a logical expression (see Fig.17, column 15, lines 5-12).

U.S. Patent 4,611,348 to Williams et al. teaches an apparatus for altering the spatial characteristics of a digital image which generates all the pixel data of a second digital image through calculation using a function f (see column 2, lines 58-67).

Contact Information

18. Any response to this action should be **mailed** to:

Assistant Commissioner for Patents
Washington, D.C. 20231

or **faxed** to:

(703) 308-9051 or (703) 308-9052 (for ***formal*** communications intended for entry)

(703) 306-5406 (for ***informal*** or ***draft*** communications, please label "PROPOSED" or "DRAFT")

19. **Hand-delivered responses** should be brought to Crystal Park II, 2121 Crystal Drive, Arlington. VA., Sixth Floor (Receptionist).

20. Any inquiry concerning this communication or earlier communications should be directed to Jon Chang whose telephone number is (703) 305-8439. He can normally be reached Monday through Thursday from 8:30 am to 5:00 pm., and on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amelia Au, can be reached at (703) 308-6604.

Any inquiry of a general nature or relating to the status of this application should be directed to the Technology Center 2600 receptionist whose telephone number is (703)305-4700 or (703)305-4750.

JC

Jon Chang
Primary Examiner

November 20, 2000